In the Claims:

Claim 1. (original): A peptide compound comprising the formula:

R_1 Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln R_2 (SEQ ID NO:1),

wherein R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 2. (original): A peptide compound comprising the formula:

R_1 Gln Thr Leu Gln Phe Arg R_2 (SEQ ID NO:2),

wherein R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 3. (original): A peptide compound comprising the formula:

R_1 Xaa_1 Gly Xaa_2 Xaa_3 Xaa_4 Xaa_5 Xaa_6 R_2 (SEQ ID NO:3),

wherein R_1 is absent or is an amino terminal capping group of the peptide compound; Xaa_1 and Xaa_2 are, independently, aspartic acid or asparagine; Xaa_3 is absent or Gly; Xaa_4 is absent, Asp, or Phe; Xaa_5 is absent, Ala, or Phe; Xaa_6 is absent or Ala; R_2 is absent or is a carboxy terminal capping group of the peptide compound; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 4. (original): The peptide compound according to Claim 3, comprising an amino acid sequence selected from the group consisting of :

Asp Gly Asp

Asp Gly Asn

Asn Gly Asn

Asn Gly Asp

Asp Gly Asp Gly Asp (SEQ ID NO:4),

Asp Gly Asp Gly Phe Ala (SEQ ID NO:5),

Asp Gly Asp Gly Asp Phe Ala (SEQ ID NO:6),

Asp Gly Asn Gly Asp Phe Ala (SEQ ID NO:7),

Asn Gly Asn Gly Asp Phe Ala (SEQ ID NO:8), and

Asn Gly Asp Gly Asp Phe Ala (SEQ ID NO:9),

wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 5. (original): A peptide compound comprising the formula:

R_1 Asn Ser Thr R_2,

wherein R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 6. (original): A peptide compound comprising the formula:

R_1 Phe Asp Gln R_2,

wherein R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 7. (original): A peptide compound comprising the formula:

R_1 Xaa_1 Xaa_2 Met Thr Leu Thr Gln Pro R_2 (SEQ ID NO:10),

wherein Xaa_1 is absent or is Ser; Xaa_2 is absent or is Lys; R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of an antioxidative enzyme.

Claim 8. (original): The peptide compound according to Claim 7, comprising the amino acid sequence selected from the group consisting of:

Ser Lys Met Thr Leu Thr Gln Pro (SEQ ID NO:11) and

Met Thr Leu Thr Gln Pro (SEQ ID NO:12).

Claim 9. (original): A peptide compound comprising the formula:

R_1 Xaa_1 Xaa_2 Xaa_3 R_2,

wherein Xaa_1 is Asp, Asn, Glu, Gln, Thr, or Tyr; Xaa_2 is absent or any amino acid; Xaa_3 is Asp, Asn, Glu, Thr, Ser, Gly, or Leu; R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 10. (original): The peptide compound according to Claim 9, wherein Xaa_2 is selected from the group consisting of Val, Gly, and Glu.

Claim 11. (original): The peptide compound according to Claim 10, wherein the peptide compound comprises the amino acid sequence selected from the group consisting of Thr Val Ser; Asp Gly Asp; Asn Gly Asn; Asp Gly; Asn Gly; Glu Gly; and Gln Gly.

Claim 12. (original): A peptide compound comprising the formula:

R_1 Leu Xaa_1 Xaa_2 R_2,

wherein Xaa_1 is any amino acid; X_2 is Gln, Gly, or Tyr; R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 13. (original): A peptide compound comprising the formula:

R_1 Met Thr Xaa_1 R_2,

wherein Xaa_1 is Asn, Asp, Gln, Glu, Thr, or Leu; R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 14. (original): The peptide compound according to Claim 13, comprising the amino acid sequence selected from the group consisting of Met Thr Leu; Met Thr Asp; Met Thr Asn; Met Thr Thr; Met Thr Glu; and Met Thr Gln.

Claim 15. (original): The peptide compound according to Claims 1-14, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic

acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 16. (original): The peptide compound according to Claim 15, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 17. (original): The peptide compound according to Claim 15, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 18. (original): The peptide compound according to Claims 1-14, wherein R_2 is the carboxy terminal capping group selected from the group consisting of a primary amine and a secondary amine.

Claim 19. (original): A peptide compound comprising an amino acid sequence selected from the group consisting of:

Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln (SEQ ID NO:1),
Gln Thr Leu Gln Phe Arg (SEQ ID NO:2),
Glu Thr Leu Gln Phe Arg (SEQ ID NO:13),
Gln Tyr Ser Ile Gly Gly Pro Gln (SEQ ID NO:14),
Ser Asp Arg Ser Ala Arg Ser Tyr (SEQ ID NO:15),
Ser Lys Met Thr Leu Thr Gln Pro (SEQ ID NO:12),
Met Thr Leu Thr Gln Pro (SEQ ID NO:13),
Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu (SEQ ID NO:16),
Asp Gly Asp Gly Asp Phe Ala (SEQ ID NO:6),
Asp Gly Asp Gly Asp (SEQ ID NO:4),
Asn Gly Asn Gly Asp Phe Ala (SEQ ID NO:8),
Asn Gly Asn Gly Asp (SEQ ID NO:17),
Asp Gly Asn Gly Asp Phe Ala (SEQ ID NO:7),
Asp Gly Asn Gly Asp (SEQ ID NO:18),

Asn Gly Asp Gly Asp Phe Ala (SEQ ID NO:9),

Asn Gly Asp Gly Asp (SEQ ID NO:19),

Asn Gly Asp Gly (SEQ ID NO:20),

Asp Gly Asp Gly Phe Ala (SEQ ID NO:5),

Asn Gly Asn Gly Phe Ala (SEQ ID NO:21),

Asp Gly Asn Gly Phe Ala (SEQ ID NO:22),

Asn Gly Asp Gly Phe Ala (SEQ ID NO:23),

Asp Gly Asp, Asn Gly Asn, Asp Gly Asn, Asn Gly Asp, Asn Ser Thr, Phe Asp Gln, Met Thr Leu, Met Thr Asp, Met Thr Asn, Met Thr Thr, Met Thr Glu, Met Thr Gln, Thr Val Ser, Leu Thr Gln, Leu Thr Gly, Leu Thr Tyr, Asp Gly, Asn Gly, Glu Gly, Gln Gly, Glu Ala, Gln Ala, Gln Gly, Asp Ala, and Asn Ala,

wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 20. (original): The peptide compound according to Claim 19, wherein the peptide compound further comprises an amino terminal capping group or a carboxy terminal capping group.

Claim 21. (original): The peptide compound according to Claim 20, wherein the amino terminal capping group is selected from the group consisting of a reduced or oxidized lipoic acid moiety, a glucose-3-O-glycolic acid, 1-6 lysine residues, 1-6 arginine residues, an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 22. (original): The peptide compound according to Claim 21, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 23. (original): The peptide compound according to Claim 20, wherein the amino terminal capping group is acetyl, palmitoyl (Palm), or docosahexaenoic acid (DHA).

Claim 24. (original): The peptide compound according to Claim 20, wherein the carboxy terminal capping group is selected from the group consisting of a primary or secondary amine.

Claim 25. (original): A method of upregulating the level of expression of a superoxide dismutase gene, a catalase gene, or both, in cells or tissues comprising contacting cells or tissues with a peptide compound according to any one of Claims 1-24, a peptide compound comprising the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu R_2 (SEQ ID NO:16), or a peptide comprising the formula:

R_1 Glu Thr Leu Gln Phe Arg R_2 (SEQ ID NO:2),

wherein R_1 is absent or is an amino terminal capping group and R_2 is absent or is a primary or secondary amine.

Claim 26. (original): The method of upregulating the levels of expression of a superoxide dismutase gene, a catalase gene, or both, in cells or tissues according to Claim 25, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 27. (original): The method of upregulating levels of expression of a superoxide dismutase gene, a catalase gene, or both in cells or tissues according to Claim 26, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 28. (original): The method of upregulating levels of expression of a superoxide dismutase or catalase gene, or both, in cells or tissues according to Claim 25, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 29. (original): A method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues comprising contacting the cells or tissues with a peptide compound of any one of Claims 1-24, a peptide compound comprising the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu R_2 (SEQ ID NO:16), a or peptide compound comprising the formula:

R_1 Glu Thr Leu Gln Phe Arg R_2 (SEQ ID NO:13),

wherein R_1 is absent or is an amino terminal capping group and R_2 is absent or is a carboxy terminal capping group.

Claim 30. (original): The method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues according to Claim 29, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 31. (original): The method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues according to Claim 30, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 32. (original): The method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues according to Claim 30, wherein the R_3—CO— acyl group is a fatty acid.

Claim 33. (original): The method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues according to Claim 29, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 34. (original): The method of counteracting the oxidative effects of reactive oxygen species and free radicals in mammalian cells or tissues according to Claim 29, wherein the carboxy terminal capping group is a primary amine or a secondary amine.

Claim 35. (original): A method of reducing or preventing an undesirable elevation in the levels of reactive oxygen species and other free radicals in cells or tissues comprising contacting the cells or tissues with a peptide compound according to any one of Claims 1-24, a peptide compound comprising the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu R_2 (SEQ ID NO:16), or a peptide compound comprising the formula:

R_1 Glu Thr Leu Gln Phe Arg R_2 (SEQ ID NO:13)

where R_1 is absent or is an amino terminal capping group; and R_2 is absent or is a carboxy terminal capping group.

Claim 36. (original): The method of reducing or preventing an undesirable elevation in the levels of reactive oxygen species and other free radicals in cells or tissues according to Claim 35, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 37. (original): The method of reducing or preventing an undesirable elevation in the levels of reactive oxygen species and other free radicals in cells or tissues according to Claim 36, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 38. (original): The method of reducing or preventing an undesirable elevation in the levels of reactive oxygen species and other free radicals in cells or tissues according to Claim 35, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 39. (original): The method of reducing or preventing an undesirable elevation in the levels of reactive oxygen species and other free radicals in cells or tissues according to Claim 35, wherein the carboxy terminal capping group is a primary amine or a secondary amine.

Claim 40. (original): A method of treating or preventing a disease or condition exhibiting an undesirable elevation in levels of reactive oxygen species or other free radicals comprising administering to an individual suffering from said disease or condition a peptide compound according to Claims 1-24.

Claim 41. (original): The method of treating or preventing a disease or condition exhibiting an undesirable elevation in levels of reactive oxygen species or other free radicals according to Claim 40, wherein the disease or condition exhibiting an undesirable elevation in levels of reactive oxygen species or other free radicals is selected from the group consisting of cerebral ischemia (stroke), myocardial infarct (heart attack), renal reperfusion damage, atherosclerosis, head trauma, brain trauma, spinal cord trauma, oxygen toxicity in premature infants, premature aging, neurodegenerative diseases, Huntington's disease, Parkinson's disease, amyotrophic lateral sclerosis, Alzheimer's disease, arthritis and other inflammatory diseases or conditions, diabetes, ulcerative colitis, human leukemia and other cancers characterized by elevation of ROS or free radicals, age-related elevation of ROS or free radicals, senility, Down syndrome, macular degeneration, cataracts, schizophrenia, epilepsy, septic shock, polytraumatous shock, burn injuries, radiation-induced elevation of ROS and free radicals, and drug-induced elevation of reactive oxygen species or other free radicals.

Claim 42. (original): The method of treating a disease or condition exhibiting an undesirable elevation in levels of reactive oxygen species or other free radicals according to Claim 40, wherein the disease or condition is a drug-induced elevation of reactive oxygen species or other free radicals and the drug is a neuroleptic or a drug listed in Table 1.

Claim 43. (original): The method of treating a disease or condition exhibiting an undesirable elevation in levels of reactive oxygen species or other free radicals according to Claim 42, wherein the disease or condition is Tardive dyskinesia.

Claim 44. (original): A method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals comprising contacting cells of the mammal with a peptide compound comprising the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu R_2 (SEQ ID NO:16),

wherein R_1 is absent or is an amino terminal capping group; and R_2 is absent or is carboxy terminal capping group.

Claim 45. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 44, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 46. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 45, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 47. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 44, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 48. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 44, wherein the carboxy terminal capping group is a primary amine or a secondary amine.

Claim 49. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according to Claims 44-48, wherein the disease or condition is selected from the group consisting of myocardial infarct (heart attack), renal reperfusion damage, atherosclerosis, head trauma, brain trauma, spinal cord trauma, oxygen toxicity in premature infants, premature aging, neurodegenerative diseases, Huntington's disease, Parkinson's disease, amyotrophic lateral sclerosis, Alzheimer's disease, arthritis and other inflammatory diseases or conditions, diabetes, ulcerative colitis, human leukemia and other cancers characterized by elevation of ROS or free radicals, age-related elevation of ROS or free radicals, senility, Down syndrome, macular degeneration, cataracts, schizophrenia, epilepsy, septic shock, polytraumatous shock, burn injuries, radiation-induced elevation of ROS and free radicals, and drug-induced elevation of ROS or free radicals.

Claim 50. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according Claim 44, wherein the disease or condition is a drug-induced elevation of reactive oxygen species or other free radicals and the drug is a neuroleptic or a drug in Table 1.

Claim 51. (original): The method of treating a disease or condition, other than stroke, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according Claim 50, wherein the disease or condition is Tardive dyskinesia.

Claim 52. (original): A method of treating pain in an individual comprising administering to the individual a peptide compound according to any of Claims 1-24, a peptide compound comprising the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu R_2 (SEQ ID NO:16), or a peptide compound comprising the formula:

R_1 Glu Thr Leu Gln Phe Arg R_2 (SEQ ID NO:13),

wherein R_1 is absent or is an amino terminal capping group; and R_2 is absent or a carboxy terminal capping group.

Claim 53. (original): The method of treating pain in an individual according to Claim 52, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 54. (original): The method of treating pain in an individual according to Claim 53, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 55. (original): The method of treating pain in an individual according to Claim 52, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 56. (original): The method of treating pain in an individual according to Claim 52, wherein the amino terminal capping group is a primary amine or a secondary amine.

Claims 57 – 61 (cancelled).

Claim 62. (original): A method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals comprising contacting cells of the mammal with a peptide compound comprising the formula:

R_1 Glu Thr Leu Gln Phe Arg R_2 (SEQ ID NO:13)

wherein R_1 is absent or is an amino terminal capping group; and R_2 is absent or is carboxy terminal capping group.

Claim 63. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 62, wherein R_1 is an amino terminal capping group selected from the group consisting of a reduced or oxidized lipoic acid moiety; a glucose-3-O-glycolic acid moiety; 1-6 lysine residues; 1-6 arginine residues; an acyl group R_3—CO—, where CO represents a carbonyl group and R_3 is a saturated or an unsaturated hydrocarbon chain having from 1 to 25 carbons, and combinations thereof.

Claim 64. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 63, wherein the amino terminal capping group is the R_3—CO— acyl group wherein R_3 is a saturated or unsaturated hydrocarbon chain having 1 to 22 carbons.

Claim 65. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 62, wherein the amino terminal capping group is acetyl, palmitic acid (Palm), or docosahexaenoic acid (DHA).

Claim 66. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or other free radicals according to Claim 62, wherein the carboxy terminal capping group is a primary amine or a secondary amine.

Claim 67. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according to Claims 62-66, wherein the disease or condition is selected from the group consisting of myocardial infarct (heart attack), renal reperfusion damage, head trauma, brain trauma, spinal cord trauma, oxygen toxicity in premature infants, amyotrophic lateral sclerosis, diabetes, ulcerative colitis, human leukemia and other cancers characterized by elevation of ROS or free radicals, age-related elevation of ROS or free radicals, senility, macular degeneration, cataracts, schizophrenia, epilepsy, septic shock, polytraumatous shock, burn injuries, radiation-induced elevation of ROS and free radicals, and drug-induced elevation of ROS or free radicals.

Claim 68. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according Claim 62, wherein the disease or condition is a drug-induced elevation of reactive oxygen species or other free radicals and the drug is a neuroleptic or a drug in Table 1.

Claim 69. (original): The method of treating a disease or condition, other than stroke, Huntington's disease, Parkinson's disease, and Alzheimer's disease, in a mammal in which there is an undesirable elevation in the levels of reactive oxygen species or free radicals according Claim 68, wherein the disease or condition is Tardive dyskinesia.

Claim 70. (original): A dietary supplement composition comprising:

a natural source purified composition obtained from an organism comprising an endogenous peptide compound, wherein said endogenous peptide compound upregulates at least one gene encoding an antioxidative enzyme.

Claim 71. (original): The dietary supplement composition according to Claim 70, wherein the gene encoding an antioxidative enzyme is selected from the group consisting of a gene encoding superoxide dismutase, a gene encoding catalase, and a combination of a gene encoding superoxide dismutase and a gene encoding catalase.

Claim 72. (original): The dietary supplement composition according to Claim 70, wherein said endogenous peptide compound comprises an amino acid sequence selected from the group consisting of:

Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln (SEQ ID NO:1),

Gln Thr Leu Gln Phe Arg (SEQ ID NO:2),

Glu Thr Leu Gln Phe Arg (SEQ ID NO:13),

Gln Tyr Ser Ile Gly Gly Pro Gln (SEQ ID NO:14),

Ser Asp Arg Ser Ala Arg Ser Tyr (SEQ ID NO:15),

Ser Lys Met Thr Leu Thr Gln Pro (SEQ ID NO:12),

Met Thr Leu Thr Gln Pro (SEQ ID NO:13),

Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu (SEQ ID NO:16),

Asp Gly Asp Gly Asp Phe Ala (SEQ ID NO:6),

Asp Gly Asp Gly Asp (SEQ ID NO:4),

Asn Gly Asn Gly Asp Phe Ala (SEQ ID NO:8),

Asn Gly Asn Gly Asp (SEQ ID NO:17),

Asp Gly Asn Gly Asp Phe Ala (SEQ ID NO:7),

Asp Gly Asn Gly Asp (SEQ ID NO:18),

Asn Gly Asp Gly Asp Phe Ala (SEQ ID NO:9),

Asn Gly Asp Gly Asp (SEQ ID NO:19),

Asn Gly Asp Gly (SEQ ID NO:20),

Asp Gly Asp Gly Phe Ala (SEQ ID NO:5),

Asn Gly Asn Gly Phe Ala (SEQ ID NO:21),

Asp Gly Asn Gly Phe Ala (SEQ ID NO:22),

Asn Gly Asp Gly Phe Ala (SEQ ID NO:23),

Asp Gly Asp, Asn Gly Asn, Asp Gly Asn, Asn Gly Asp, Asn Ser Thr, Phe Asp Gln, Met Thr Leu, Met Thr Asp, Met Thr Asn, Met Thr Thr, Met Thr Glu, Met Thr Gln, Thr Val Ser, Leu Thr Gln, Leu Thr Gly, Leu Thr Tyr, Asp Gly, Asn Gly, Glu Gly, Gln Gly, Glu Ala, Gln Ala, Gln Gly, Asp Ala, and Asn Ala.

Claim 73. (original): The dietary supplement composition according to Claim 70, further comprising:

an exogenously provided peptide compound, wherein said exogenously provided compound upregulates at least one gene encoding an antioxidative enzyme.

Claim 74. (original): The dietary supplement composition according to Claim 73, wherein said endogenous peptide compound and said exogenously provided peptide compound are the same or different peptide compound that upregulates at least one gene encoding an antioxidative enzyme.

Claim 75. (original): The dietary supplement composition according to Claim 73, wherein said endogenous peptide compound and said exogenously provided peptide compound upregulate the same or different gene encoding an antioxidative enzyme selected from the group consisting of a gene encoding superoxide dismutase, a gene encoding catalase, and a combination of a gene encoding superoxide dismutase and a gene encoding catalase.

Claim 76. (original): The dietary supplement composition according to Claims 70 or 73, wherein said natural source is green velvet antler and said organism is a ruminant.

Claim 77. (original): The dietary supplement composition according to Claim 76, wherein said ruminant is a deer or elk.

Claim 78. (original): The dietary supplement composition according to Claims 70 or 73, wherein said organism is a plant or a microorganism.

Claim 79. (original): The dietary supplement composition according to Claim 78, wherein said plant is tea or herb.

Claim 80. (original): The dietary supplement composition according to Claim 78, wherein said natural source purified composition is wuzi yanzong herbal mixture.

Claim 81. (original): The dietary supplement composition according to Claim 73, wherein said endogenous peptide compound and said exogenously provided peptide compound comprise, independently, a peptide compound comprising the formula:

R_1 Xaa_1 Gly Xaa_2 Xaa_3 Xaa_4 Xaa_5 Xaa_6 R_2 (SEQ ID NO:3),

wherein R_1 is absent or is an amino terminal capping group of the peptide compound; Xaa_1 and Xaa_2 are, independently, aspartic acid or asparagine; Xaa_3 is absent or Gly; Xaa_4 is absent, Asp, or Phe; Xaa_5 is absent, Ala, or Phe; Xaa_6 is absent or Ala; R_2 is absent or is a carboxy terminal capping group of the peptide compound; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 82. (original): The dietary supplement composition according to Claim 73, wherein said endogenous peptide compound and said exogenously provided peptide compound comprise, independently, a peptide compound comprising the formula:

R_1 Xaa_1 Xaa_2 Xaa_3 R_2,

wherein Xaa_1 is Asp, Asn, Glu, Gln, Thr, or Tyr; Xaa_2 is absent or any amino acid; Xaa_3 is Asp, Asn, Glu, Thr, Ser, Gly, or Leu; R_1 is absent or is an amino terminal capping group; R_2 is absent or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 83. (original): The dietary supplement composition according to Claim 73, wherein said endogenous peptide compound and said exogenously provided peptide compound comprise, independently, an amino acid sequence selected from the group consisting of:

Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln (SEQ ID NO:1),

Gln Thr Leu Gln Phe Arg (SEQ ID NO:2),

Glu Thr Leu Gln Phe Arg (SEQ ID NO:13),

Gln Tyr Ser Ile Gly Gly Pro Gln (SEQ ID NO:14),

Ser Asp Arg Ser Ala Arg Ser Tyr (SEQ ID NO:15),

Ser Lys Met Thr Leu Thr Gln Pro (SEQ ID NO:12),

Met Thr Leu Thr Gln Pro (SEQ ID NO:13),

Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu (SEQ ID NO:16),

Asp Gly Asp Gly Asp Phe Ala (SEQ ID NO:6),

Asp Gly Asp Gly Asp (SEQ ID NO:4),
Asn Gly Asn Gly Asp Phe Ala (SEQ ID NO:8),
Asn Gly Asn Gly Asp (SEQ ID NO:17),
Asp Gly Asn Gly Asp Phe Ala (SEQ ID NO:7),
Asp Gly Asn Gly Asp (SEQ ID NO:18),
Asn Gly Asp Gly Asp Phe Ala (SEQ ID NO:9),
Asn Gly Asp Gly Asp (SEQ ID NO:19),
Asn Gly Asp Gly (SEQ ID NO:20),
Asp Gly Asp Gly Phe Ala (SEQ ID NO:5),
Asn Gly Asn Gly Phe Ala (SEQ ID NO:21),
Asp Gly Asn Gly Phe Ala (SEQ ID NO:22),
Asn Gly Asp Gly Phe Ala (SEQ ID NO:23),
Asp Gly Asp, Asn Gly Asn, Asp Gly Asn, Asn Gly Asp, Asn Ser Thr, Phe Asp Gln, Met Thr Leu, Met Thr Asp, Met Thr Asn, Met Thr Thr, Met Thr Glu, Met Thr Gln, Thr Val Ser, Leu Thr Gln, Leu Thr Gly, Leu Thr Tyr, Asp Gly, Asn Gly, Glu Gly, Gln Gly, Glu Ala, Gln Ala, Gln Gly, Asp Ala, and Asn Ala.

Claim 84. (original): The dietary supplement composition according to any one of Claims 73-83, wherein said exogenously provided peptide compound comprises an amino terminal capping group and/or a carboxy terminal capping group.

Claim 85. (original): The dietary supplement composition according to Claim 84, wherein the amino terminal capping group is selected from the group consisting of:

1 to 6 lysine residues; 1 to 6 arginine residues; a glucose-3-O-glycolic acid group; an acyl group containing a hydrocarbon chain from 1 to 25 carbon atoms in length; an acetyl group; a palmitoyl group; a lipoic acid group; a docosahexaenoic acid group; and combinations thereof.

Claim 86. (original): The dietary supplement composition according to Claim 84, wherein said carboxy terminal capping group is an amino group linked to the carboxy terminal carbonyl in an amide linkage.

Claim 87. (original): The dietary supplement composition according to Claim 86, wherein said amino group is a primary or secondary amine.

Claim 88. (currently amended): A method of preparing [making] a dietary supplement or pharmaceutical composition useful for reducing or preventing reactive oxygen species in a mammal, comprising mixing [purifying a composition from a natural source obtained from an organism comprising] a chemical composition consisting essentially of one or more peptide compound [upregulates expression of] capable of upregulating at least one gene of the group consisting of the genes encoding [an antioxidative enzyme] superoxide dismutase (SOD), catalase (CAT) and glutathione perioxidase (GST-Px), with a suitable vehicle, wherein said peptide compound having more than one amino acid and having 7 or fewer than 7 amino acids.

Claim 89. (currently amended): The method [of making a dietary supplement composition] according to Claim 88, wherein said [endogenous] peptide compound comprises an amino acid sequence selected from the group consisting of:

[Gln Tyr Lys Leu Gly Ser Lys Thr Gly Pro Gly Gln (SEQ ID NO:1),]
Gln Thr Leu Gln Phe Arg (SEQ ID NO:2),
Glu Thr Leu Gln Phe Arg (SEQ ID NO:13),
[Gln Tyr Ser Ile Gly Gly Pro Gln (SEQ ID NO:14),
Ser Asp Arg Ser Ala Arg Ser Tyr (SEQ ID NO:15),
Ser Lys Met Thr Leu Thr Gln Pro (SEQ ID NO:12),]
Met Thr Leu Thr Gln Pro (SEQ ID NO:13),
[Asp Gly Asp Gly Asp Phe Ala Ile Asp Ala Pro Glu (SEQ ID NO:16),]
Asp Gly Asp Gly Asp Phe Ala (SEQ ID NO:6),
Asp Gly Asp Gly Asp (SEQ ID NO:4),
Asn Gly Asn Gly Asp Phe Ala (SEQ ID NO:8),
Asn Gly Asn Gly Asp (SEQ ID NO:17),
Asp Gly Asn Gly Asp Phe Ala (SEQ ID NO:7),
Asp Gly Asn Gly Asp (SEQ ID NO:18),
Asn Gly Asp Gly Asp Phe Ala (SEQ ID NO:9),

Asn Gly Asp Gly Asp (SEQ ID NO:19),

Asn Gly Asp Gly (SEQ ID NO:20),

Asp Gly Asp Gly Phe Ala (SEQ ID NO:5),

Asn Gly Asn Gly Phe Ala (SEQ ID NO:21),

Asp Gly Asn Gly Phe Ala (SEQ ID NO:22),

Asn Gly Asp Gly Phe Ala (SEQ ID NO:23),

Asp Gly Asp, Asn Gly Asn, Asp Gly Asn, Asn Gly Asp, Asn Ser Thr, Phe Asp Gln, Met Thr Leu, Met Thr Asp, Met Thr Asn, Met Thr Thr, Met Thr Glu, Met Thr Gln, Thr Val Ser, Leu Thr Gln, Leu Thr Gly, Leu Thr Tyr, Asp Gly, Asn Gly, Glu Gly, Gln Gly, Glu Ala, Gln Ala, Gln Gly, Asp Ala, and Asn Ala.

Claims 90 - 91. (cancelled)

Claim 92. (currently amended): The method [of making a dietary supplement composition] according to Claim [90] 88, wherein said [endogenous peptide compound and said exogenously provided peptide compound comprise, independently, a] peptide compound comprising the formula:

R_1 Xaa_1 Gly Xaa_2 Xaa_3 Xaa_4 Xaa_5 Xaa_6 R_2 (SEQ ID NO:3),

wherein R_1 is absent or is an amino terminal capping group of the peptide compound; Xaa_1 and Xaa_2 are, independently, aspartic acid or asparagine; Xaa_3 is absent or Gly; Xaa_4 is absent, Asp, or Phe; Xaa_5 is absent, Ala, or Phe; Xaa_6 is absent or Ala; R_2 is absent or is a carboxy terminal capping group of the peptide compound[; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme].

Claim 93. (currently amended): The method of [making a dietary supplement composition] according to Claim [90] 88, wherein said [endogenous peptide compound and said exogenously provided peptide compound comprise, independently, a] peptide compound comprising the formula:

R_1 Xaa_1 Xaa_2 Xaa_3 R_2,

wherein Xaa_1 is Asp, Asn, Glu, Gln, Thr, or Tyr; Xaa_2 is absent or any amino acid; Xaa_3 is Asp, Asn, Glu, Thr, Ser, Gly, or Leu; R_1 is absent or is an amino terminal capping group; R_2 is absent

or is a carboxy terminal capping group; and wherein the peptide compound upregulates expression of a gene encoding an antioxidative enzyme.

Claim 94. (cancelled)

Claim 95. (currently amended): The method [of making a dietary supplement] according to any one of Claims [90-94] 88-89, wherein the [exogenously provided] peptide compound comprises an amino terminal capping group and/or a carboxy terminal capping group.

Claim 96. (currently amended): The method [of making a dietary supplement composition] according to Claim 95, wherein the amino terminal capping group is selected from the group consisting of:

1 to 6 lysine residues; 1 to 6 arginine residues; a glucose-3-O-glycolic acid group; an acyl group containing a hydrocarbon chain from 1 to 25 carbon atoms in length; an acetyl group; a palmitoyl group; a lipoic acid group; a docosahexaenoic acid group; and combinations thereof.

Claim 97. (currently amended): The method [of making a dietary supplement composition]according to Claim 95, wherein said carboxy terminal capping group is an amino group linked to the carboxy terminal carbonyl in an amide linkage.

Claim 98. (currently amended): The method [of making a dietary supplement composition]according to Claim 97, wherein said amino group is a primary or secondary amine.

Claim 99. (currently amended): The method [of making a dietary supplement composition] according to Claims 88 or 90, wherein the gene encoding an antioxidative enzyme is selected from the group consisting of a gene encoding superoxide dismutase, a gene encoding catalase, and a combination of a gene encoding superoxide dismutase and a gene encoding catalase.

Claims 100 -103. (cancelled)

Claim 104. (new): The method as described in claim 88, wherein the said peptide compound comprising fewer than 6 amino acids.

Claim 105. (new): The method as described in claim 88, wherein the said peptide compound comprising fewer than 5 amino acids.

Claim 106. (new): The method as described in claim 88, wherein the suitable vehicle is selected from a group consisting of a pharmaceutically acceptable excipient, salt, adjuvant and carrier, and a composition purified from a natural source.

Claim 107. (new): The method as described in claim 106, wherein said natural source is selected from a group consisting of green velvet antler, deer and elk.

Claim 108. (new): The method as described in claim 106, wherein said natural source is selected from a group consisting of plants and microorganisms.

Claim 109. (new): The method as described in claim 88, wherein the said peptide compound is capable of upregulating the genes encoding superoxide dismutase (SOD), catalase (CAT) and glutathione perioxidase (GST-Px).

Claim 110. (new): A method of treating or preventing a disease exhibiting elevated levels of reactive oxygen species in a tissue of an individual comprising, administering to an individual suffering or at risk for said disease an amount of a peptide compound, which the peptide compound comprises 7 or fewer amino acids, and which amount is effective to upregulate transcription of at least one gene of the group consisting of the genes encoding superoxide dismutase (SOD), catalase (CAT) and glutathione perioxidase (GST-Px), in the tissue of the individual.

Claim 111. (new): The method of claim 110, wherein the said peptide compound having at least one capping group selected from a group consisting of an amino terminal capping group and a carboxy terminal capping group.

Claim 112. (new): The method of claim 110, wherein the peptide compound comprising fewer than 6 amino acids.

Claim 113. (new): The method of claims 110, wherein the peptide compound comprising fewer than 5 amino acids.

Claim 114. (new): The method of claims 110 to 113, wherein the disease is selected from a group consisting of consisting of cerebral ischemia (stroke), myocardial infarct (heart attack), renal reperfusion damage, atherosclerosis, head trauma, brain trauma, spinal cord trauma, oxygen toxicity in premature infants, premature aging, neurodegenerative diseases, Huntington's disease, Parkinson's disease, amyotrophic lateral sclerosis, Alzheimer's disease, arthritis and other inflammatory diseases or conditions, diabetes, ulcerative colitis, human leukemia and other cancers characterized by elevation of ROS or free radicals, age-related elevation of ROS or free radicals, senility, Down syndrome, macular degeneration, cataracts, schizophrenia, epilepsy, septic shock, polytraumatous shock, burn injuries, radiation-induced elevation of ROS and free radicals, and drug-induced elevation of reactive oxygen species or other free radicals.

Claim 115. (new): The method of claim 110, wherein the peptide compound having the formula:

R_1 Xaa_1 Gly Xaa_2 Xaa_3 Xaa_4 Xaa_5 Xaa_6 R_2 (SEQ ID NO:3),

wherein R_1 is absent or is an amino terminal capping group of the peptide compound; Xaa_1 and Xaa_2 are, independently, aspartic acid or asparagine; Xaa_3 is absent or Gly; Xaa_4 is absent, Asp, or Phe; Xaa_5 is absent, Ala, or Phe; Xaa_6 is absent or Ala; R_2 is absent or is a carboxy terminal capping group of the peptide compound.

Claim 116. (new): The method of claim 110, wherein the peptide compound having the formula:

R_1 Asp Gly Asp Gly Asp Phe Ala R_2,

wherein R_1 is absent or is an amino terminal capping group of the peptide compound; and R_2 is absent or is a carboxy terminal capping group of the peptide compound.

Claim 117. (new): The method of claim 110, wherein the peptide compound comprises a peptide fragment selected from the group consisting of Asp-Gly-Asp, Thr-Val-Ser, Asp-Gly, Glu-Ala and Glu-Thr-Leu-Gln-Phe-Arg.